

## MEMORANDUM

CH2MHILL

## Response to Comments on the Draft Human Health Risk Assessment for SWMUs 1, 15, and 24, Naval Air Station, Oceana

TO: Bob Stroud/USEPA PM  
Betty Ann Quinn/USEPA Toxicologist

COPIES: Tim Reisch/LANTDIV PM  
Jack Robinson/CH2M HILL PM

FROM: Holly Rosnick/CH2M HILL

DATE: August 11, 2000

I have reviewed your comments on the human health risk assessment for SWMUs 1, 15, and 24 at the Naval Air Station, Oceana. The following discusses our responses and plan of action for finalizing the report. I would like to have a conference call to discuss these responses as soon as possible.

### General Comments

- 1. Section 3.1.1, Data Evaluation, third bullet: An explanation of how use of one-half of the sample quantitation limit (QL) as the concentration for non-detected constituents affected sample screening for samples with elevated quantitation limits (where one-half the QL exceeded both the screening concentration and the highest detected concentration) should be provided in this section. In addition, the evaluation of data section should include discussion of data representativeness and quality, including the elevated QLs which affect some of the subsequent risk calculations.**

### Response:

Discussion with EPA is required to determine the appropriate approach for the elevated QLs. The report will be revised per the outcome of the discussion with EPA.

- 2. Section 3.1.2, Selection of Chemicals of Potential Concern, first bullet: While previously reviewed and agreed to by EPA, a brief rational for use of ten times the RBC value for screening of surface water and sediment data should be provided in this section.**

### Response:

A discussion stating "The use of ten times is a conservative estimate assuming that a receptor is in contact with surface water and sediment at much lower exposure parameters (ingestion rate, skin surface area, exposure frequency, and exposure duration)."

- 3. Section 3.2.3, Quantification of Exposure, page 3-5, last paragraph: The first statement in this paragraph is misleading since QLs for most of the constituents driving the risk for this SWMU have QLs available. Table A-1-1 reveals results for numerous surface soil samples along with quantitation limits for all non-detects for selected COCs. In the case of the metal COCs,**

**only two historic samples of surface soil had been obtained, and these results (along with quantitation limits for non-detects) are also on Table A-1-1.**

**Response:**

The text will be revised to read "For constituents that have data sets of more than five samples, the 95%UCL will be calculated. For constituents with data sets of five or less samples, the maximum detected concentration will be used as the exposure point concentration."

- 4. Section 3.3.4, Toxicity Profiles – Polycyclic Aromatic Hydrocarbons (PAHs): A significant omission from this discussion is the ability of the PAHs to cause short term skin irritation and phototoxicity. It is also well documented that PAHs are associated with cancer via direct contact exposure.**

**Response:**

The toxicity profile will be revised to include discussions on the short-term skin irritation, phototoxicity, and carcinogenic impacts of PAHs.

- 5. Section 3.4.3, Interpretation of Numerical Results: The word "cumulative" should be added before "cancer risks" in the first sentence of this section.**

**Response:**

Will incorporate.

- 6. Sections 4.3.3, 5.3.3, and 6.3.3, Release and Transport Mechanisms: For each of the three SWMUs evaluated in this risk assessment, the primary transport mechanism as described in these sections is described as leaching of contaminants from soil to groundwater. This route of transport can be significant, especially for volatile contaminants which can serve as a long term source for groundwater contamination. Numerous contaminants are present in soil at all three SWMUs at concentrations exceeding EPA's soil screening concentrations considered protective of this route. Consideration of the potential for migration of contaminants from soil to groundwater may be indicated prior to finalization of remedial options for these SWMUs.**

**Response:**

Will consider the potential migration of contaminants from soil to groundwater prior to finalization of remedial options.

- 7. Section 7, Uncertainty: Cases where risks are suspected of being underestimated should also be discussed in the uncertainty section. For example, there are likely numerous additional PAHs present in samples that contain the somewhat limited number of PAHs included in the analytical method. It is acknowledged that toxicity criteria are not generally available for these additional PAHs; however, risks that may be associated with them can be discussed in a qualitative manner in the uncertainty section. In addition, limitations on the number of exposure routes that can be evaluated for PAHs (primarily ingestion), also suggest that risks associated with PAHs may be higher than indicated in the quantitative risk calculations.**

**Response:**

Will incorporate.

- 8. Tables in Appendices: Numerous tables (e.g., A-1-1, A-1-5, A-2-5, etc.) in the Appendices have no units included, and while the appropriate unit can usually be inferred, the units should be listed on each table that lists any type of analytical result. In addition, many tables do not include definitions of data qualifiers such as =, UL, B, b, and j. These definitions should be included. It also is not clear why detects tables (e.g., A-2-2, A-2-3, A-2-4, etc.) include results that are flagged U, not detected.**

**Response:**

Will incorporate.

- 9. Appendices A-4, B-4, and C-4, Occurrence, Distribution, and Selection of Chemicals of Potential Concern: Please provide a brief rationale for the use of surrogate toxicity values for applicable contaminants. Why was trans-1,2-dichloroethene used as a surrogate for 2,3-dichloroethene instead of cis-1,2-dichloroethene?**

**Response:**

Trans-1,2-dichloroethene was incorrectly used as a surrogate for 2,3-Dichloroethene. The HHRA will be revised using cis-1,2-dichloroethene as a surrogate. The surrogates were selected based on similar structure and assumed toxicity per discussions with the EPA Superfund Toxicologists. If the RCRA group uses different surrogates, the HHRA will be revised accordingly upon receipt of the RCRA-approved surrogates.

- 10. Appendices A-4, B-4, and C-4, Non-cancer Toxicity Data Tables and Summary of Receptor Risk Tables: Many contaminants evaluated for non-cancer endpoints can have more than one target organ. For example, arsenic can affect both the skin and the vascular system. When Hazard Indices (HI) are segregated by target organ, all appropriate target organs should be assigned the associated HQ for each contaminant. His that are segregated by target organ in the Summary of Receptor Risk Tables include only one target organ, when for several constituents two or more target organs are appropriated.**

**Response:**

The tables will be corrected accordingly.

**SWMU 1**

**Risk Summary: With the exception of exposure by future resident children, all risks associated with exposure to soil for this SWMU are below or within EPA's target risk range for carcinogenic and noncarcinogenic contaminants. Exposure by a future resident child is associated with a Hazard Index (HI) of 1.7. This HI is derived primarily from exposure to iron in soil. It should be mentioned, however, that soil results for PAHs include numerous samples with elevated quantitation limits (as high as 26 mg/kg in some cases). These elevated QLs indicate that PAHs may be present, but not detected, at concentrations of concern at this SWMU. It is possible that risks associated with PAHs at SWMU 1 are underestimated.**

**Hypothetical potable use of groundwater beneath SWMU 1 is also associated with noncarcinogenic risks for both adults and children that exceed a HI of 1. These risks are primarily associated with naphthalene. Predicted cancer risks for potable use of groundwater are  $2E-05$ , within EPA's target risk range.**

**Response:**

Will revise according to Comment 1 above.

**11. Table A-3-1 lists that maximum concentration of benzo(b)fluoranthene as  $2E-01$  mg/kg. Table A-1-1 lists a value of 0.36 (unit not specified) for this contaminant. If the correct unit for benzo(b)fluoranthene in Table A-1-1 is mg/kg, then the appropriate corrections to Table A-3-1 and subsequent calculation tables should be made.**

**Response:**

The 0.36 value is flagged with a U indicating non-detect. Thus the comment concerning the elevated QLS will also impact these tables and will be revised per our pending discussion indicated in Comment 1.

**12. Table 4.6b, Values Used for Daily Intake Calculations: This table contains references to Table 7.6d, however, no Table 7.6d (or 7.6c) were included in this Appendix.**

**Response:**

Tables 7.6c and 7.6d were inadvertently excluded from the Draft report. The tables will be included in the next submittal.

**SWMU 15**

**Risk Summary: Risks for both current and future exposure for numerous receptors exceeded EPA's target risk ranges. For current receptors exposed to soil, target cancer risk ranges are exceeded by residential adults and children, as well as for industrial workers. It is notable that these risks are associated with soil samples obtained from the sides of the excavation pit at this SWMU, and are intended to assess whether sufficient contaminated soil was removed.**

**Hypothetical potable use of groundwater is associated with both cancer and non-cancer risks significantly above target risk ranges for both adults and children.**

**13. Table 3.1, Medium Specific Exposure Point Concentration Summary: Values listed under the column labeled "Arithmetic Mean" on this table appear to be erroneous since they are higher than the maximum detected concentrations listed two columns to the right.**

**Response:**

The arithmetic mean and 95% UCL's were not converted from ug/kg to mg/kg in Tables 3.1 and 3.4. The concentrations will be revised accordingly.

**14. Tables 5.1 and 5.2, Non-Cancer Toxicity Data: No toxicity criteria for benzene are included in either table for benzene, and no non-cancer risks**

have been calculated for benzene in groundwater at this SWMU (non-cancer risks associated with benzene were calculated for SWMUs 1 and 24). Non-cancer hazard quotients associated with benzene in groundwater at SWMU 15 are on the order of 31 via ingestion and approach 100 via inhalation.

**Response:**

The tables and subsequent risk calculations will be revised accordingly.

**15. Table 7.6d, Inhalation Exposure Concentrations from Foster and Chrostowski Shower Model: The sources for each of the listed exposure assumptions (not previously provided to EPA) should be included in this table.**

**Response:**

Will add sources for exposure assumptions to Table 7.6d.

**SWMU 24**

**Risk Summary:** Evaluation of soil data results revealed no contaminants at concentrations above conservative screening concentrations. No quantitative risks were therefore calculated for soil at this SWMU. Quantitation limits for volatile organic contaminants (VOCs) in several soil samples were elevated, and the presence of significant concentrations of VOCs in these samples cannot be ruled out. This may not be an appreciable concern for direct human exposure; however, the possible presence of high concentrations of VOCs in soil may serve as a contaminant source for groundwater.

**Hypothetical potable use of groundwater beneath SWMU 24 is associated with both cancer and noncancer risks that exceed EPA target ranges for both adults and children.**

**Response:**

Will address in elevated QLs as a result of the pending conversation with EPA as indicated in response to comment 1 above.

<b>UNITED STATES ENVIRONMENTAL PROTECTION AGENCY</b> <b>REGION III</b> <b>1650 Arch Street</b> <b>Philadelphia, Pennsylvania 19103-2029</b>		
<b>SUBJECT:</b>	Draft Human Health Risk Assessment for SWMUs 1, 15 and 24, Naval Air Station, Oceana	<b>DATE:</b> July 20, 2000
<b>FROM:</b>	Betty Ann Quinn Toxicologist	
<b>TO:</b>	Bob Stroud Project Manager	

I have reviewed the above captioned risk assessment and have the following comments. I do not recommend approval of this report until the following comments have been addressed satisfactorily.

### General Comments

1. Section 3.1.1, Data Evaluation, third bullet: An explanation of how use of one-half of the sample quantitation limit (QL) as the concentration for non-detected constituents affected sample screening for samples with elevated quantitation limits (where one-half of the QL exceeded both the screening concentration and the highest detected concentration) should be provided in this section. In addition, the evaluation of data section should include discussion of data representativeness and quality, including the elevated QLs which affect some of the subsequent risk calculations.
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5. Section 3.4.3, Interpretation of Numerical Results: The word "cumulative" should be added before "cancer risks" in the first sentence of this section.
6. Sections 4.3.3, 5.3.3, and 6.3.3, Release and Transport Mechanisms: For each of the three SWMUs evaluated in this risk assessment, the primary transport mechanism as described in these sections is described as leaching of contaminants from soil to groundwater. This route of

transport can be significant, especially for volatile contaminants which can serve as a long term source for groundwater contamination. Numerous contaminants are present in soil at all three SWMUs at concentrations exceeding EPA's soil screening concentrations considered protective of this route. Consideration of the potential for migration of contaminants from soil to groundwater may be indicated prior to finalization of remedial options for these SWMUs.

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## **SWMU 1**

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Hypothetical potable use of groundwater beneath SWMU 1 is also associated with noncarcinogenic risks for both adults and children that exceed a HI of 1. These risks are primarily associated with naphthalene. Predicted cancer risks for potable use of groundwater are

2E-05, within EPA's target risk range.

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#### SWMU 15

**Risk Summary:** Risks for both current and future exposure for numerous receptors exceeded EPA's target risk ranges. For current receptors exposed to surface soil at SWMU 15, target cancer risk ranges are exceeded by industrial workers. For future receptors exposed to soil, target cancer risk ranges are exceeded by residential adults and children, as well as for industrial workers. It is notable that these risks are associated with soil samples obtained from the sides of the excavated pit at this SWMU, and are intended to assess whether sufficient contaminated soil was removed.

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#### SWMU 24

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Hypothetical potable use of groundwater beneath SWMU 24 is associated with both cancer and noncancer risks that exceed EPA target ranges for both adults and children.